Available online at www.sciencedirect.com
SCIENCE DIRECT®
International Journal of Approximate Reasoning
38 (2005) 215–216
INTERNATIONAL JOURNAL OF APPROXIMATE REASONING
www.elsevier.com/locate/ijar

Special Issue on ECSQARU-2003: The Seventh European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty

Message from the Guest Editors

This issue of IJAR is devoted to top quality papers from ECSQARU-2003, the Seventh European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty, held 2–5 July 2003 in Aalborg, Denmark. The ECSQARU conferences, held every second year since 1991, are a major forum for advances in the theory and practice of reasoning and decision making under uncertainty in intelligent systems. The scope of ECSQARU includes, but is not limited to, fundamental issues, representation, inference, learning, and decision making in qualitative and numeric paradigms.

A total of 74 original papers were submitted to ECSQARU-2003. Each submission was reviewed by three referees and 45 papers were accepted. After the conference, nine papers were nominated by the area/session chairs for inclusion in this special issue. Extended versions of the nominated papers were reviewed for the second time by two reviewers according to IJAR standards. Two of the papers are from the Guest Editors' home institutions and were handled by the Editor-in-Chief. At the end, seven papers were accepted for inclusion in this issue.

All the seven papers are incidentally on probabilistic approaches. In the first paper, Jaeger studies transformations on the set of all probability distributions over a finite state space that preserves certain probabilistic relationships. His results provide a new perspective on the fundamental issue of non-informative priors for the parameters of multinomial distributions as well as the problem of measure selection, i.e., selection of a probability measure based on partial constraints.

The next two papers are on inference. Moral and Salmerón advance their previous work on importance sampling in Bayesian networks that uses a tree to represent the

0888-613X/$ - see front matter
doi:10.1016/j.ijar.2004.07.002

sampling distribution. They propose a method that improves the quality of the sampling distribution using samples already generated. Madsen and Jensen consider the problem of solving Bayesian decision problems that contain both continuous and discrete variables. They derive an algorithm for solving a specific class of linear-quadratic conditional Gaussian influence diagrams based on variable elimination.

Learning of Bayesian networks is the subject matter of the papers by Studený and Chen et al. Characterization of the inclusion neighborhood of a Bayesian network is of fundamental importance for search-based learning methods. Studený reveals the internal structure of the neighborhood and thereby obtains a characterization that overcomes shortcomings of the existing ones. Model complexity is an important factor in model selection and, when latent variables are present, the complexity of a model is measured by its effective dimension rather than the number of parameters. Chen et al. present some theoretical results that simplify the computation of effective dimensions of partially observed polytree models.

Qualitative probabilistic networks are a qualitative version of Bayesian networks where influences among variables are qualified with signs rather than conditional probability distributions. Inference in such network often leads to uninformative conclusions. The paper by Bolt et al. proposes a method that alleviates the problem using situational signs. Probabilistic argumentation is a marriage between logical reasoning and probabilistic reasoning recently introduced in the Automated Reasoning community. Haenni's paper shows how it can be applied to public-key cryptography to authenticate digital certificates.

We extend our sincere thanks to the Editor-in-Chief, Prof. Piero P. Bonissone, for making this special a reality, to all the authors, and to all the reviewers of this issue: Fabio Cozman, Michel Grabisch, Finn V. Jensen, Kristian Kersting, Tomáš Kočka, Helge Langseth, Anders L. Madsen, Christophe Marsala, Serafín Moral, José Peña, Henri Prade, Prakash Shenoy, Jeff Undercoffer, Bin Yu, Dmitry Rusakov, Enrique Castillo, Jean-Louis Golmard, and Jirka Vomlel.

Thomas D. Nielsen
Department of Computer Science
Aalborg University
Aalborg, Denmark

Nevin L. Zhang
Department of Computer Science
The Hong Kong University of Science & Technology
Clear Water Bay Road, Kowloon
Hong Kong, China
Tel.: +852 23587029; fax: +852 23581477
E-mail address: lzhang@cs.ust.hk

Available online 17 September 2004